Minerva Conditions Database Design

Components

Major components of the system are:

- PostgreSQL database
- Python API – a collection of library functions which organize the data into "folders" and maintain the data structure and integrity
- Data access tools – set of Python scripts used by Minerva mostly to store data, but also they can be used to read data
- Web server – a web application, which provides web access to the data stored in the database. It uses the Python API as the low level.

Design

Minerva Conditions database is a mixed direct access/web access database application. Data is stored into the database by the client application, which accesses the database directly. Data is read from the database primarily via web server. Web server is used to throttle and control access to the database and the web technology is used to cache data to increase efficiency and throughput of the application.

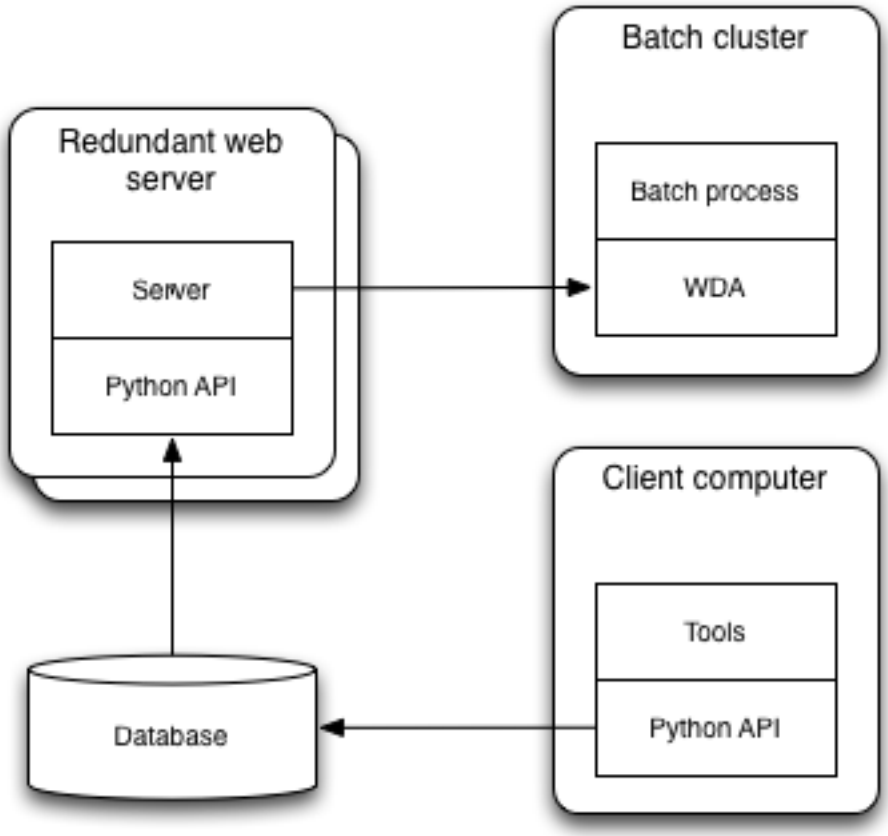

Figure 1: Minerva Conditions DB design

Database Representation

On the application level, the data is represented in terms of “folders”. Each folder is a collection of timestamped snapshots. Each snapshot in a folder is an array of identical tuples, indexed by the channel number.

Also, the database has the notion of “tags”. A tag represents some named state of the database. It can be used to refer to some previous state, which may have been overridden by subsequent updates.

Current Deployment

Currently, the database is located on minervadbprod server, redundant web server runs on dbweb3, dbweb4, ifbcollectorgpvm03, ifbcollectorgpvm03. Multiplexing data proxy runs on mnvcon-data. Data caching is performed internally by the application servers.